

## APPENDIX 4.4

### Louisville Metro Multi-Hazard Mitigation Five-Year Action Plan

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The Advisory Committee met in three subcommittees to brainstorm a five-year Action Plan, consider cost/benefits, prioritize projects, and set an implementation timeline and standard. The forward-thinking activities and projects are geared toward existing structures and infrastructure, and still others are geared toward education and public outreach.

Primary to the Action Plan is the Mitigation Goals, as follows.

#### **Louisville Metro Multi-Hazard Mitigation Goals**

- Goal 1**—Minimize the loss of life and injuries that could be caused by multi-hazards.
- Goal 2**—Facilitate a sustainable economy by protecting agriculture, business, and other economic activities from multi-hazards.
- Goal 3**—Facilitate the strengthening of public emergency services, its infrastructure, facilities, equipment, and personnel to multi-hazards.
- Goal 4**—Develop a community-wide mitigation effort by building stronger partnerships between government, businesses, and the general public.
- Goal 5**—Increase public and private understanding of multi-hazard mitigation through the promotion of mitigation education and awareness of natural hazards.
- Goal 6**—Enhance existing or design new policies and technical capabilities that will reduce the effects of multi-hazards.
- Goal 7**—Enhance existing technical and GIS data and capabilities that will reduce the effects of multi-hazards.

The mitigation actions vary in their objective to mitigate according to the 7 goals. Following is a summary of the number of projects per hazard.

▶ All Hazards Category	21 projects
▶ Flood	26 projects
▶ Dam/Levee Failure	14 projects
▶ Wind/Storm Driven	7 projects
▶ Winter/Storm	3 projects
▶ Haz-Mat	3 projects
▶ Geological: Earthquake, Karst/Sinkholes, Landslide	2 projects
▶ Earthquake	7 projects
▶ Karst/Sinkhole	7 projects
▶ Landslide	5 projects
▶ Extreme Heat	3 projects
▶ Drought	2 projects
▶ Wildfire	<u>6 projects</u>

**106 Projects**



Types	Hazards
<b>Water Hazards</b>	<ul style="list-style-type: none"> <li>▶ Flood</li> <li>▶ Dam / Levee Failure</li> </ul>
<b>Wind &amp; Haz-Mat Hazards</b>	<ul style="list-style-type: none"> <li>▶ All Hazards category</li> <li>▶ Haz/Mat</li> <li>▶ Severe Winter Storms</li> <li>▶ Wind / Storm Driven Hazards: <ul style="list-style-type: none"> <li>· Hailstorm</li> <li>· Tornado</li> <li>· Severe Thunderstorms</li> </ul> </li> </ul>
<b>Weather, Soils &amp; Geological Hazards</b>	<ul style="list-style-type: none"> <li>▶ Drought</li> <li>▶ Earthquake</li> <li>▶ Extreme Heat</li> <li>▶ Karst / Sinkhole</li> <li>▶ Landslides</li> <li>▶ Wildfire</li> </ul>

# 2011 All Hazards Category

## Five-Year Action Plan

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. All Hazards	<p><b>Collect Additional Enhanced Data for Publicly Owned Buildings and Essential Facilities</b></p> <p><b>PHASE 1: update Inventory for critical or essential facilities and transportation</b></p> <ul style="list-style-type: none"> <li>Define essential facilities and structure and place a minimum value on what will be inventoried.</li> <li>Inventory Data to reside in LOJIC system.</li> <li>Develop a central spatial database of all publicly owned buildings and facilities.</li> <li>Collect and Assemble building values for critical or essential facilities. Data to reside in LOJIC system. For example: <ul style="list-style-type: none"> <li><input type="checkbox"/> Public facilities</li> <li><input type="checkbox"/> Hospitals</li> <li><input type="checkbox"/> Parochial and private schools</li> <li><input type="checkbox"/> Non-profits</li> <li><input type="checkbox"/> Local, state, and federal.</li> <li><input type="checkbox"/> Transportation</li> <li><input type="checkbox"/> Utility infrastructure</li> </ul> </li> </ul> <p>Grant application submitted in December 2010</p>	<p>PVA – Jay Mickle</p> <p>LOJIC - Curt Bynum</p> <p>EMA – Jim McKinney</p> <p>PW – Dirk Gowin</p>	<p>Metro Facilities</p> <p>KY Educ. Dept.</p> <p>KY Div. Health Care</p> <p>U.S. agencies</p> <p>JCPS</p> <p>KIPDA</p> <p>TARC</p> <p>KYTC</p> <p>KyDPH</p> <p>U of L CHR</p>	<p>Begin collecting inventory, as appropriate.</p> <p>Grant dependent</p>	<p>Grant</p> <p>NOB</p>	<p>Collected data</p> <p>Spatial database</p>	C	1, 2, 4, 5 & 7

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
2. All Hazards	<p><b>PHASE 2: Three Projects depend on the completion of Phase 1.</b></p> <ol style="list-style-type: none"> <li>Develop Risk Assessment of Publicly owned buildings, essential facilities, and transportation. (See Flood # 4).</li> <li>Review Evacuation Plans for Central downtown government Public Buildings. <ul style="list-style-type: none"> <li>Disseminate Safe Room locations.</li> </ul> </li> <li>Develop/Revise Emergency Action Plans (EAP), as needed <ul style="list-style-type: none"> <li>Disseminate Safe Room locations.</li> </ul> </li> </ol>	<p>PW - Dirk Gowin</p> <p>EMA – Jim McKinney</p> <p>LOJIC – Curt Bynum</p>	<p>PVA</p> <p>IPL</p> <p>JCPS</p> <p>KYTC</p> <p>KIPDA</p> <p>TARC</p> <p>Metro Facilities Mgmt</p> <p>U of L CHR</p>	<p>Depends on Completion of Phase 1</p> <p>Grant dependent</p>	<p>NOB</p> <p>Grant</p> <p>Request from general funding</p>	<ol style="list-style-type: none"> <li>Risk assessment</li> <li>Review of Evacuation Plans</li> <li>Mitigation Strategy to retrofit buildings</li> <li>Require EAP for certain buildings</li> </ol>	C	1, 2, 4, 5 & 7
3. All Hazards	<p><b>Develop risk assessment with best available building data</b></p> <p><b>Collect Additional Enhanced Building Data.</b></p> <p>A major research project:</p> <ul style="list-style-type: none"> <li>Year built, especially structures older than 1980</li> <li>Type of foundation, building construction type, number of stories</li> </ul>	<p>TBD special project required</p>	<p>LOJIC</p> <p>Fire Inspections</p> <p>Metro Police</p> <p>Metro Facilities</p> <p>Public Health</p> <p>Local Hospitals</p> <p>PVA</p> <p>JCPS</p> <p>IPL</p> <p>U of L CHR</p>	<p>Grant dependent</p>	<p>Resources needed</p> <p>Request from state or federal funding or grant</p>	<p>Collected data</p>	A	7

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
4. All Hazards	<p><b>Develop Risk Assessment: Research the Existing Collected Data and Incorporate Inventory into LOJIC</b></p> <p>PDS to collect standardized historical data. Next steps:</p> <ol style="list-style-type: none"> <li>1. Historical Structures Survey.</li> <li>2. Inventory of public buildings: review data for accuracy and completeness.</li> <li>3. Incorporate data into LOJIC</li> </ol> <p>Metro PDS and PVA will work with LOJIC to coordinate the inventory. <i>See Flood #4.</i></p>	<p>LOJIC -Curt Bynum</p> <p>Historic Preservation – Richard Jett</p>	<p>PVA</p> <p>PDS</p> <p>PW</p> <p>Metro Facilities</p>	2011	NOB Resources needed	Information gathered & Disseminated Layers in LOJIC	A	7
5. All Hazards	<p><b>Mitigate Public Transportation, Public Buildings and Utility Infrastructure</b></p> <ol style="list-style-type: none"> <li>1. To retrofit for hazard events (wind loads, seismic shock and floodproofing) use Risk Assessment from Phase 2 and research existing: <ul style="list-style-type: none"> <li>► Transportation</li> <li>► Public Buildings and</li> <li>► Utility Infrastructure</li> </ul> </li> <li>2. Develop a strategy and program to retrofit structures at-risk. <ul style="list-style-type: none"> <li>► Target structures that may need protection for each hazard.</li> </ul> </li> <li>3. Collect information and develop appropriate mitigation strategy to retrofit</li> </ol> <p><i>See Flood #4.</i></p>	<p>PW – Dirk Gowin</p> <p>MSD -David Johnson</p> <p>IPL – Robert Kirchdorfer</p> <p>LG&amp;E – David Guy</p> <p>LWC – Glen Mudd</p>	<p>EMA</p> <p>KYTC</p> <p>KIPDA</p> <p>TARC</p> <p>TRIMARC</p> <p>Regional Airport Authority</p>	Grant dependent	NOB Grants	Retrofit of infrastructure	A	1,2,3, 4, 5, 6 & 7

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
6. All Hazards	<b>Prepare for Special Needs At-Risk Groups During Disaster</b> <ol style="list-style-type: none"> <li>Develop Special needs preparedness program</li> <li>Develop "Special needs registry"</li> <li>Promote campaign to self-identify if special needs in household</li> <li>Build a Special needs database to help plan for response activities and shelters and evacuation</li> </ol> Use <a href="http://www.disability.gov">www.disability.gov</a> as resource	EMA-Jim McKinney	Public Health ARC Samaritan Global KIPDA	Grant dependent	NOB  Grants	Special Needs Program developed  Self-identify Registry developed and promoted  Database of Special needs registrants	B	1, 4, 5 & 6
7. All Hazards	<b>Data Collection for Hospital Patient Discharge Data</b> <ul style="list-style-type: none"> <li>Emergency Department patient discharge data for preparedness epidemiologist for six syndromes               <ol style="list-style-type: none"> <li>Cardiac (chest pain),</li> <li>G.I. (vomiting, diarrhea),</li> <li>Neurological (seizures, paralysis),</li> <li>Respiratory (difficulty breathing, symptoms of asthma),</li> <li>Psych (mental status change, emotional instability) and</li> <li>Other: Infectious Disease</li> </ol> </li> <li>will require purchase of telecomm/software to facilitate sharing of hospital data to MPH</li> </ul>	Public Health – Bill Wetter, Steve Hosch, and Ma'isah Edwards	Hospitals  Samaritan Global	Grant dependent	NOB	Data collected for broader use	B	1, 3, 4, 5 & 6

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
8. All Hazards	<b>Health Impact Assessment “Tool” to Develop Projects</b> <ul style="list-style-type: none"> <li>For evaluation of proposed development projects in connection with the potential ramifications to the health and wellness of stakeholders.</li> <li>The Health Impact Assessment is in early stages. A committee will be formed in early 2011 and will develop and pilot an assessment tool.</li> </ul>	Public Health - Bill Wetter and Steve Hosch	PDS Metro Parks PW LMPD	Grant dependent	Grants NOB	Formation of a committee.  Completion of an Impact Assessment Tool	B	1, 3, 4, 5 & 6
9. All Hazards	<b>Community Health Education “clearinghouse”</b> <ul style="list-style-type: none"> <li>Promotion potentially partnering with others to serve as a “clearinghouse”</li> <li>Will help people find proper resources for such things as health screenings, existing education or outreach programs, etc.</li> <li>Public Health currently working to develop a list of resources. Developing strategy to better promote a coordinated service.</li> </ul>	Public Health - Bill Wetter and Steve Hosch	ARC KY VOAD Churches KyDPH Samaritan Global	2011	NOB	Development of Partnerships and Outreach	B	1, 3, 4, 5 & 6
10. All Hazards	<b>Increase Training for WebEOC</b> <ul style="list-style-type: none"> <li>Increase training for more people to use Web EOC.</li> <li>Set a schedule</li> <li>Develop list of potential candidates.</li> </ul>	EMA – Jim McKinney	Mayor’s office MetroSafe / 911	2011	NOB	Training developed and disseminated	B	1, 5, 6 & 7

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
11. All Hazards	<b>Disseminate Emergency Road Closures</b> <ul style="list-style-type: none"> <li>Develop real-time road closures/conditions</li> </ul>	PW- Dan O'Day	MetroSafe / 911 LOJIC TARC LWC LG& E LMPD EMA LOJIC MSD Metro/Suburban Fire TRIMARC KYTC	2011	NOB	Real-time effort in place	A	1 & 3
12. All Hazards	<b>Emergency Generators in Public Schools</b> <ul style="list-style-type: none"> <li>Eighteen emergency generators to completely supply electrical power for all shelters both for the school system and the community.</li> <li>Begin project by prioritizing facilities to receive generators.</li> </ul>	JCPS – Chuck Fleischer	EMA ARC	Grant dependent	Estimated cost for an 800 KW generator installed at 18 high schools is \$18 million.  Grants NOB	Installed Generators	C	1, 2, 3, 4 & 5
13. All Hazards	<b>Oxygen Generators in Ambulances for EMS</b> <ul style="list-style-type: none"> <li>Generators for EMS to charge life-saving equipment, e.g., oxygen</li> </ul>	EMS – Roger Parvin	EMA	Grant dependent	NOB Grants	Oxygen generators in ambulances	C	1, 2, 4, 5 & 6



Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
14. All Hazards	<b>Emergency Preparedness Training for Public Schools</b> <ul style="list-style-type: none"> <li>▶ Provide funding for professional development for administrators for Mitigation, Preparedness, Response and Recovery through JCPS' Safety Procedures Manual training.</li> <li>▶ Additional FEMA Introduction to Incident Command for Schools course would also be administered.</li> <li>▶ Promote self preparedness.</li> <li>▶ Partner w/ KyEM for instructors and materials</li> </ul>	JCPS – Chuck Fleischer	EMA Samaritan Global KyEM Homeland Security KCTCS	Grant dependent	Estimated cost for 800 administrators @ 6 hours training = approximately \$240,000.  NOB  Grants	Training delivered	B	1, 3, 4 & 5
15. All Hazards	<b>Emergency Communication for Public School Buses during Disaster</b> <ul style="list-style-type: none"> <li>▶ To enhance communication systems through 2-way radio system compatible with MetroSafe including radios for buses.</li> </ul>	JCPS – Chuck Fleischer	EMA	Grant dependent	Estimated cost for radios = \$1.5 million.  NOB  Grants	Radios in place	C	1, 3, 4 & 5
16. All Hazards	<b>Emergency Supply Kits for Public Schools</b> <ul style="list-style-type: none"> <li>▶ Basic emergency supply kit for schools and medical/medicine storage – to have minimal storage for medicines and records for school.</li> </ul>	JCPS – Chuck Fleischer	EMA Samaritan Global	Grant dependent	Estimated cost = \$304,000  NOB  Grants	Supply Kits @ schools	C	1, 3, 4 & 5
17. All Hazards	<b>During Emergency Hazard Event Response</b> <ul style="list-style-type: none"> <li>▶ Portable water purification systems</li> </ul>	National Guard	EMA Public Health LWC	Grant dependent	NOB  Grants	Purification systems in place	C	1, 2, 4, 5 & 6

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
18. All Hazards	<b>Mitigation: Develop an “All Hazards Information Portal”</b>  Storing hazard occurrences and damage data on a “portal”. Track and share data on hazard occurrences and damage costs <ul style="list-style-type: none"> <li>▶ MetroCall could help drive data collection and promote information</li> <li>▶ Database and upload function for agency use from All Hazard portal</li> </ul>	MSD – David Johnson	ARC Public Health EMA LG&E JCPS MetroCall LOJIC NWS KyEM KDOW CHR UofL	Grant dependent	TBD  NOB  Grant  State Planning	Operating hazard portal	B	1,3, 4, 6 & 7
19. All Hazards	<b>Increase Business Partnerships and the Creation of COOP planning</b> <ul style="list-style-type: none"> <li>▶ Partnership w/ GLI could be communication component</li> <li>▶ Partnership with U of L grant proposal for developing a center</li> </ul> Grant submitted by KyEM in 2011	UofL CHR – Josh Human	Public Health GLI Samaritan Global PDS KIPDA Kentuckiana Contingency Business Group	Grant dependent	NOB  Grants	Partnerships in a Coop Planning Group	C	1, 2, 3, 4, & 6
20. All Hazards	<b>Outreach to Metro Government and Public Agencies.</b> Partner with agencies for education/ response and recovery. Develop a program/training for employees/staff of Louisville Metro Government and other public agencies. <ol style="list-style-type: none"> <li>1. Produce an approx 15-minute video that outlines “All-Hazards Preparedness Plan (Family Plan)”</li> <li>2. Request video to be a part of Metro Government “Orientation”. Partner with Metro to require employees and all public agencies to attend.</li> <li>3. Video also to be available on-line to reach a wider audience, such as Metro TV.</li> </ol>	EMA, Jim McKinney	JCPS GLTV Metro HR ARC KyDPH Metro TV Samaritan Global	Grant Dependent	Resources needed  Request from general funding  NOB	<ul style="list-style-type: none"> <li>▶ Production of Videos</li> <li>▶ SOP for Metro orientation</li> <li>▶ Partnership with GLTV for regular airing of video</li> <li>▶ Response and recovery education materials</li> </ul>	B	1, 2, 4, & 5

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
21. All Hazards	<b>Public Education &amp; Standard Public Statements for All Hazards</b> 1. Promote use of early warning systems in multiple languages for standard outreach materials 2. Utilize recording by MetroCall 311 to disseminate brief information on hazards. 3. Use Greater Louisville TV (GLTV) for awareness messages. 4. Utilize News media for public education 5. Promote better personal planning/public education for disaster preparedness 6. For educational and public outreach: <ul style="list-style-type: none"> <li>▶ Develop Standardized Seasonal "Fact Sheets"</li> <li>▶ Message to be consistent for ARC, Health Dept., EMA, LG&amp;E, Dept. of Education, etc...</li> <li>▶ Develop a seasonal messages for teachers / citizens</li> </ul>	EMA -Jim McKinney  NWS - John Gordon & Joe Sullivan	ARC JCPS NWS Samaritan Global Metro/Suburban Fire KYEM Public Health MSD USGS LMPD Corps of Engineers LG&E LWC Local media outlets Metro TV MetroCall - 311 Metro United Way - 211	TBD for each project	NOB  Grants	1. Standard Message developed  2. Message on 311  3. Outreach on GLTV  4. Education materials for disaster preparedness  5. Fact Sheets and Seasonal messages	B	1,3, 4 & 5

Note: "NOB" indicates an internal agency effort via Normal Operating Budget resources

# 2011 FLOOD

## Five-Year Action Plan

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. Flood	<b>Update Floodplain Ordinance</b> <ul style="list-style-type: none"> <li>Particularly the enforcement section</li> <li>Review criteria for enclosure limits</li> </ul>	MSD – David Johnson	KDOW – NFIP	Dec 2011	NOB	Passage by Metro Council	C	1 & 6
2. Flood	<b>Flood Studies for Mitigation</b> Funding from MSD's general fund and joint actions at MSD and private development community (e.g. St Mary & Eliz)	MSD – David Johnson	Private Development Community Corps of Engineers JHSMH	Based on construction	NOB	New studies LOMRs Etc...	B	1, 2 & 4
3. Flood	<b>Critical Facilities Analysis</b> <ul style="list-style-type: none"> <li>Analyze if facilities lie in unmapped FEMA floodplain areas that might unknowingly be at risk</li> <li>Develop list for mitigation</li> </ul>	MSD GIS services – Julie Buckler	Louisville Metro Services	2011	NOB	Mitigation Studies	C	1 & 3
4. Flood	<b>Mitigation: Project to Protect Existing Buildings And Infrastructure</b> Target at-risk public and private buildings from flood for mitigation/retrofit <ol style="list-style-type: none"> <li>Inventory public buildings at-risk (also, see All Hazards # 4 &amp; 5)</li> <li>Develop a plan for mitigation for public property.</li> <li>Develop a plan for mitigation for private property.</li> </ol>	MSD – Justin Gray LOJIC – Curt Bynum PW – Dirk Gowin	Metro Facilities JCPS Louisville Free Public Library	Grant dependent	NOB for inventory and strategy Grants for retrofit	Inventory Strategy # of buildings protected	B	1 & 2

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
5. Flood	<b>Risk Assessment: Develop a Flood Risk Assessment with Best Available Data</b>  <b>Collect Building first floor elevations</b> <ul style="list-style-type: none"> <li>▶ Use data to model at-risk structures</li> <li>▶ Cost could be significant depending on the # of elevations</li> <li>▶ Corps of Engineers data should be reviewed</li> <li>▶ List all agencies with data or sources and research various locations and types of data.</li> </ul> <p>* FEMA grant awarded, project to begin 2011/12</p>	LOJIC - Curt Bynum EMA - Jim McKinney MSD – Julie Buckler	Corps of Engineers FEMA	FEMA grant awarded, project to begin 2011/12	Grants	Completed elevations	B	1 & 7
6. Flood	<b>Future Floodplain Buyouts Throughout The County</b> <ul style="list-style-type: none"> <li>▶ Identify repetitive loss candidates, specifically properties in the floodway</li> <li>▶ Prepare grant application Letter of Intent (LOI) and grant application process</li> </ul>	MSD – David Johnson	EMA KyEM	Grant dependent	Grants	Acquisition of properties	A	1 & 2
7. Flood	<b>Acquisitions in Western Louisville CSSA Area</b> See list of potential areas at the end of the Flood section	MSD – Justin Gray	EMA KyEM	Grant dependent	Grants	Acquisition of properties	A	1 & 2
8. Flood	<b>Permanent Signage On The Parkway Areas</b> <ul style="list-style-type: none"> <li>▶ Warning people that they are entering a floodprone area</li> <li>▶ Determine strategy and funding</li> </ul>	MSD – Lori Rafferty PW - Tim Maier	Metro Parks KYTC	2011 -develop strategy	NOB or grant	Installation of signs	B	1 & 5
9. Flood	<b>Parking Signs For Existing Floodprone Areas</b> Coordinate with MSD and Public Works <ul style="list-style-type: none"> <li>▶ Warning people that they are parking in a floodprone area</li> <li>▶ Determine strategy and funding</li> </ul>	MSD – Lori Rafferty PW - Tim Maier	Metro Parks Private business	2011 -develop strategy	NOB	Installation of signs	B	1 & 5

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
10. Flood	<b>Place Flood Elevation Markers Along At-Risk Roads</b>  Especially roads that are frequently overtopped to demonstrate to drivers/pedestrians how deep the water is <ul style="list-style-type: none"> <li>▶ Complete an inventory of current sign locations</li> <li>▶ Develop strategy for other at-risk areas</li> <li>▶ Post signs</li> </ul>	MSD – Kevin Bright  PW - Tim Maier	NWS Metro Parks KYTC Suburban Cities	2011 -develop strategy	NOB	Installation of signs	B	1 & 5
11. Flood	<b>Review and Update High Water Emergency Plans</b> <ul style="list-style-type: none"> <li>▶ Complete an inventory</li> <li>▶ Review Plans</li> <li>▶ Update Plans</li> </ul>	EMA - Jim McKinney  MSD - Lori Rafferty	Corp of Engineers LMPD All Fire Districts NWS Mayor's Office PW MSD	2011	NOB	Plans in place	B	1
12. Flood	<b>Flood Control Projects</b>  Metro Parks is contemplating flood water retention projects in cooperation with MSD. E.g. Iroquois Park	Metro Parks – Jon Hamilton	Corps of Engineers MSD LOPC	Grant dependent	Grant	Construction of improvement	A	1 & 2
13. Flood	<b>Mill Creek Study Project</b>  1. Ongoing Corp of Engineers study 2. Construction Water Resources Development Act (WRDA)	MSD – Brad Selch	Corp of Engineers	1. 2011, Completion of study 2. Grant dependent	Federal Grant (WRDA) dependent	1. Completion of study 2. Construction of project	A	1 & 2
14. Flood	<b>Aluma Basin –</b> MSD is in the design stage for a flood control basin near the confluence of Northern and Southern Ditch. This basin will be constructed on 50 acres of property recently purchased by MSD. <ul style="list-style-type: none"> <li>○ Basin will be located between Northern Ditch and the Scottsdale and Confederate Acres subdivisions.</li> <li>○ Basin could provide an additional 300 acre/feet of floodplain storage in this low-lying area.</li> </ul>	MSD – David Schaflein	None identified	Grant dependent	NOB  Regional Facility Fee (partly)  Grant	Construction of basin	A	1 & 2

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15. Flood	<b>LaClede Basin</b> – Proposed flood control basin located near end of W. Indian Trail and Greasy Ditch	MSD – David Schaftlein	None identified	Grant dependent	Grant	Construction of basin	A	1 & 2
16. Flood	<b>Tin Dor Way Basin</b> - proposed flood control basin in Fairdale near Tin Dor Way  If flood control basin is not feasible, then develop strategy for possible buyouts	MSD – David Schaftlein	None identified	Grant dependent	Grant	Construction of basin	A	1 & 2
17. Flood	<b>Bluegrass Avenue Box Culvert</b> – remove the ‘reverse’ invert (remove siltation) and possibly add a second barrel at this intersection. <ul style="list-style-type: none"> <li>▶ Part 1 – Maintenance of existing</li> <li>▶ Part 2 – Identify and implement other improvements</li> </ul>	MSD Part 1, Saeed Assef  Part 2, David Schaftlein	PW Corps of Engineers  JHSMH	1. June 2011  2. Grant dependent	\$300,000 estimate  NOB  Grant	Construction of improvement	A	1, 2 & 3
18. Flood	<b>Lift station at Churchman Avenue</b> <ul style="list-style-type: none"> <li>▶ Separate stormwater system into hospital</li> <li>▶ Eliminate gravity basement service</li> <li>▶ Develop strategy and estimate</li> </ul>	Sts Mary & Elizabeth – Steve French	MSD	2011	NOB  Grant  Insurance	Construction of station	A	2 & 3
19. Flood	<b>Flood Pump Stations</b> <ol style="list-style-type: none"> <li>1. Rehab, replace and update flood pump stations</li> <li>2. Inventory and verify emergency generators and backup. Apply for grants where needed.</li> </ol>	MSD – Roy Flynn	Corp of Engineers	1. Annual  2. 2011	NOB  Grants	Construction of Improvements	A	1, 2 & 3
20. Flood	<b>Metro Parks Reviewing Its Buildings For Flood Damage Mitigation</b> <ul style="list-style-type: none"> <li>▶ Reviewing backflow prevention devices, floor drains, sump pumps, gutters and downspouts, and sheet runoff diversion. Develop inventory.</li> <li>▶ Mitigation projects identified in this review will be placed on repair schedule</li> <li>▶ Accomplished as funds permit over the next five years.</li> </ul>	Metro Parks – John Hamilton	MSD – Backwater Valve program	Annual	NOB	Construction of Improvements	B	2

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
21. Flood	<b>Stream restoration of Mill Creek Away From The Parking Lot (Sts Mary &amp; Elizabeth)</b> <ul style="list-style-type: none"> <li>Requires approval by the Corp. of Engineers and MSD</li> <li>HMGP application request submitted by Sts Mary &amp; Elizabeth in 2010 to KyEM and FEMA</li> </ul>	Sts Mary & Elizabeth - Steve French	MSD Corp. of Engineers NRCS	Grant dependent	NOB Grant	Construction of Project	C	2 & 3
22. Flood	<b>Establish and Coordinate Tree Programs And Partnerships To Increase Tree Canopy, Parkway Areas</b>  Metro Parks and MSD are expanding the tree canopy in the metropolitan area. Part of the plant 10,000 trees campaign.  Partner with PDS to increase canopy on parkway areas <ul style="list-style-type: none"> <li>Metro Parks will continue over the next five years to replace trees along parkways and in landscaped park areas as needed to retain tree canopy cover in the metropolitan area.</li> </ul>	Metro Parks – John Hamilton  MSD – Phyllis Croce	PDS	Five-years	NOB	# of trees planted	C	4
23. Flood	<b>Public Outreach about Basement Flooding</b> <ul style="list-style-type: none"> <li>Education of the public from keeping critical items out of basements – computers, books, important files etc.....</li> <li>Target the audience on regulatory floodplain or MSD customer service requests rather than just the FEMA floodplains</li> </ul>	MSD – Lori Rafferty MSD - Pat Kirk	Media Louisville Free Public Library	June 2011	NOB	Published info	B	5
24. Flood	<b>Public Outreach: Evaluate Ways to Get Message to a Targeted Audience</b>  Message is to better educate the public regarding floodprone areas including flood insurance and plumbing modification programs	MSD – Lori Rafferty MSD - Pat Kirk	Media Louisville Free Public Library	June 2011	NOB	Published info	B	5



Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
25. Flood	<b>Mitigation: Develop program for Non-profit retrofitting</b> Investigate non-profit/humanitarian home building entities for low-income floodproofing /retrofitting projects in a floodprone area.	MSD - Marty Schindeler	Corporate sponsors All agencies JCPS Habitat for Humanity HBAL	Grant dependent	Grant dependent NOB	# of building protected	B	5
26. Flood	<b>Increase Coordination of Flood Warning using NWS Chat Rooms</b> NWS Chat Rooms are set up to coordinate with staff in an official capacity. Several chat rooms exist, and NWS can set up additional ones if needed. Chat Rooms already include USGS, Corp, media, & EMS and can be made available to other agencies.	NWS – Joe Sullivan	USGS Corp MSD Media EMS EMA	2011	NOB	Coordination in place	B	1, 3 & 6

**Note: “NOB” indicates an internal agency effort via Normal Operating Budget resources**

CSSA Proposed Project Areas				
Rank Order	Project Name	Number of Structures	Preliminary Budget	Grant Submittal Date
1.	Maple St. Area, Phase I	21	\$ 1,685,000.00	3/31/2010
2.	Maple St. Area, Phase II	17	\$ 1,385,000.00	3/31/2010
3.	Maple St. Area, Phase III	54	\$ 4,250,000.00	3/31/2010
4.	Maple St. Area, Phase IV	36	\$ 2,640,000.00	3/31/2010
5.	Algonquin Meadows	26	\$ 1,980,000.00	11/31/2010
6.	Belquin Neighborhood	43	\$ 3,180,000.00	1/31/2010
7.	Transylvania Neighborhood	8	\$ 960,000.00	11/31/2010
8.	Wewoka/West Park	48	\$ 3,760,000.00	
9.	Parkway Terrace	20	\$ 2,810,000.00	
10.	Linwood Ave. Area, Phase I	29	\$ 2,145,000.00	
11.	Linwood Ave. Area Phase II	40	\$ 3,065,000.00	
12.	Linwood Ave. Area Phase III	48	\$ 3,185,000.00	
13.	Chauncey/Colonial Park	32		
14.	Duncan Street	57	\$ 6,700,000.00	
15.	West Roseland	14	\$ 1,030,000.00	
16.	Del Park Terrace	7		
17.	South 41st Street	14	\$ 1,195,000.00	
18.	Dumesnil Street	85		
19.	Wilson Avenue	26		
20.	Thompson Place	49		
21.	Colorado Avenue	53		
22.	Rodman Street	29		
23.	West Kenton Street	40		
24.	Industrial Park	42		
25.	Churchill	27		
26.	Central Station	39		
27.	Burton Avenue	14		
28.	Heywood Avenue	41		
29.	South 5th Street	21		
30.	Cedar Street	65		
31.	Bank Street	22		
32.	Pirtle Street	20		
33.	West Breckinridge Street	35		
34.	Wheeler Avenue	46		
	<b>Potential</b>	<b>1,168</b>		

# 2011 DAM AND LEVEE FAILURE

## Five-Year Action Plan

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. Dam & Levee Failure	<p><b>Risk Assessment: Develop A Dam &amp; Levee Risk Assessment With Best Available Data</b></p> <p><b>PHASE 1: Verify GIS locations for existing dams.</b> Develop data inventory of all dams within Louisville Metro area. Steps:</p> <ul style="list-style-type: none"> <li>▶ Collect data from KDOW for locations and assessment of the State-Owned dams.</li> <li>▶ Perform research in the State Dam Safety Program records, which requires an "Open Records" request to the KDOW.</li> <li>▶ Research records and locations of dams within metro boundaries.</li> <li>▶ From research, collect other important data, e.g. current EOPs, dam materials, past inspections, violations, etc...</li> <li>▶ Collect inventory of dam locations and geo-code.</li> <li>▶ Verify which Class C dams have an EOP.</li> </ul> <p>* FEMA grant submitted in December 2010 by Metro</p>	<p>MSD - Tony Marconi</p> <p>LOJIC -Curt Bynum</p> <p>KDOW Dam Safety Program, Marilyn Thomas</p>	<p>NRCS</p> <p>Metro/Suburban Fire Districts</p> <p>Metro Parks</p>	Grant dependent	FEMA grant submitted in December 2010	GIS locations and inventory database	B	1,2,& 7
2. Dam & Levee Failure	<p><b>PHASE 2: Perform Risk Assessments on Class B and C Dams</b></p> <p><b>Class C, High-Hazard Dams</b></p> <ul style="list-style-type: none"> <li>▶ Verify all Class C dams have and maintain an EOP (tied to above action item results).</li> <li>▶ Verify downstream warning system, public notice, etc. are included in EOP.</li> </ul> <p><b>Class B, Moderate/Significant Risk Dams</b></p> <ul style="list-style-type: none"> <li>▶ Assess Class B dams for any downstream construction that might raise dam classification</li> </ul>	<p>MSD - Tony Marconi</p> <p>Metro Parks - John Hamilton</p>	<p>KDOW</p> <p>Dam Owners</p> <p>LOJIC</p> <p>Corp of Engineers</p>	Phase 1 dependent	Grant dependent	EOP inventory and dam reclassification	A	1 & 2

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
3. Dam & Levee Failure	<b>Mitigation: Develop EOPs for Class C Dams</b> <ul style="list-style-type: none"> <li>Develop EOPs for dams without plans</li> <li>Update existing EOPs.</li> <li>Add NWS notification for alerts via weather radios</li> </ul>	MSD – Tony Marconi  Metro Parks - John Hamilton  KYDOW -Carey Johnson	Private dam owners EMA NWS LOJIC Corp of Engineers	Phase 1 & 2 dependent	NOB Potential new budget item or grant funding	EOP completion for all Class C dams within the County	A	1 & 2
4. Dam & Levee Failure	<b>Mitigation: Post a Sign/Landmark On Dams With Classification Type (A, B, or C).</b> * Signs to include: <ul style="list-style-type: none"> <li>Contact numbers</li> <li>Name of dam</li> <li>Maximum water impoundment</li> </ul> <i>* Project dependent upon dam inventory (Phase 1)</i>	MSD - Tony Marconi	KYDOW Dam owner EMA Corp of Engineers LOJIC Metro Parks	Dependent upon dam inventory (Phase 1)	Potential new budget item or grant funding	# of dams with signs /landmarks installed	C	2, 3, & 5
5. Dam & Levee Failure	<b>Mitigation: Removal or Replace Unsafe Dams</b> Once inspections are complete, the list of unsafe dams will determine next steps for repair and/or removal of dams. An unsafe dam would move to a Priority A project for immediate action.  <i>* Project dependent upon dam inventory and assessment (Phases 1 &amp; 2)</i>	KY DOW Dam Safety Program – Marilyn Thomas	NRCS Dam owner LOJIC MSD Metro Parks	Phase 1 & 2 dependent	Metro Parks MSD Capital Projects NRCS	# of dams removed or repaired	A	1, 2, & 3
6. Dam & Levee Failure	<b>Risk Assessment: Develop a Dam &amp; Levee Risk Assessment With Best Available Data</b> <ul style="list-style-type: none"> <li>Develop Dam inundation models for Class C dams</li> <li>Models will provide the at-risk locations of properties downstream, required warning times.</li> </ul>	MSD – Tony Marconi LOJIC - Curt Bynum	Corp of Engineers KDOW LOJIC MSD	Phase 1 & 2 dependent	Potential new budget item or grant funding	Inundation Models and Mapping	B	1, 2, & 7

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
7. Dam & Levee Failure	<b>Risk Assessment and Mitigation</b> <ul style="list-style-type: none"> <li>Place a benchmark or similar point on dams to determine if movement is occurring.</li> <li>Benchmark placement should coincide with inspection and data development.</li> </ul>	Metro Parks - John Hamilton  MSD – Tony Marconi	KYDOW Dam owner EMA Corp of Engineers PDS LOJIC	Phase 1 & 2 dependent	Potential new budget item or grant funding	# of dams with benchmarks and signs installed	B	2 & 3
8. Dam & Levee Failure	<b>Consider Requiring EOP for Class B Dams</b> <ul style="list-style-type: none"> <li>Class B dams have at-risk structures below the levee, therefore should require an emergency plan.</li> <li>Partner with KY DOW Dam Safety Program for requirements and regulations</li> </ul>	KY DOW Dam Safety Program – Marilyn Thomas	MSD Metro Parks Dam owner LOJIC	Phase 1 & 2 dependent  2015	NOB	EOPs	C	1
9. Dam & Levee Failure	<b>Mitigation: Evaluate Damage To Levee And Flood Protection System</b>  Primarily Ohio River Flood Protection System and large pump stations (i.e. Beargrass Creek). Corps annual inspection is ongoing.  Five-year inspection is more detailed	MSD –Loyiso Melizwe	Corps of Engineers LG&E	Annual	MSD funded; estimated at \$2.2 million/yr. (\$38 million Total Est. Cost)	# of facilities evaluated and rehabilitated	A	1
10. Dam & Levee Failure	<b>Mitigation: Develop Better Local Dam Construction And Inspections Criteria</b>  In order of the following: <ol style="list-style-type: none"> <li>Develop inspection and construction criteria to review existing dams – adopt in Land Development Code</li> <li>Begin periodic dam Inspection to develop reports. Metro Parks has a plan in place and performs regular inspections.</li> </ol>	Metro Parks - John Hamilton  MSD - Lori Rafferty	KYDOW Dam owner EMA Corp of Engineers PDS	2012	Grants NOB	- Inspection criteria and updated classifications  - Adopted in Land Development Code	A	2, 3, 4, & 7

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
11. Dam & Levee Failure	<b>Mitigation: Develop A Local Dam Permitting Process</b> <ul style="list-style-type: none"> <li>▶ For dams that do not fit the state's definition of a dam.</li> <li>▶ Adopt process in codes.</li> </ul>	Metro Parks - John Hamilton  MSD - Justin Gray/David Johnson/Tony Marconi	KYDOW EMA PDS IPL	2012	Grants NOB	- SOP Permit process - Adopted in Land Development Code	C	1, 2, 3, 4 & 7
12. Dam & Levee Failure	<b>Metro Parks Remedial Work on their Dams</b> Remedial work needs to be competed on some dams <ul style="list-style-type: none"> <li>▶ Maintenance and inspection needed</li> <li>▶ Coordinate with MSD</li> </ul>	Metro Parks - John Hamilton	MSD	Grant dependent	NOB Grant	Work completed	A	1 & 2
13. Dam & Levee Failure	<b>Public Awareness</b> <ul style="list-style-type: none"> <li>▶ Through use of levees and dams for recreational purposes</li> <li>▶ Signage of the flood protection system history and assets</li> </ul>	MSD - Tony Marconi	Corp of Engineers KDOW	2015	NOB	Signs installed	B	5
14. Dam & Levee Failure	<b>Ash Ponds – Haz-Mat</b> Ensure they are safe	LG& E – David Guy  KDOW – Marilyn Thomas	EPA Corp of Engineers	2011	NOB		A	1 & 2

Note: "NOB" indicates an internal agency effort via Normal Operating Budget resources

# 2011 Wind/Storm Driven Hazards

## Five-Year Action Plan

### Tornado, Thunderstorms, Hailstorms, and Lightning

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. Wind/Storm Driven Hazards	<b>Find Location And Build Tornado Shelters/Safe Rooms For Minors Lane Neighborhood</b> <ul style="list-style-type: none"> <li>▶ Tornado shelter/safe room for Minors Lane Neighborhood property. Minors Lane school is being opened for the community during severe storm warnings for 2 manufactured home parks. <ul style="list-style-type: none"> <li>○ A separate 24-hour available independent shelter is desperately needed. This would give immediate access to the community.</li> </ul> </li> <li>▶ Research location at manufactured home parks, JCPS, and/or UPS property</li> </ul>	JCPS – Chuck Fleisher, Jr.	EMA UPS Manufactured home park	Grant dependent	Estimated cost \$200,000. Grants NOB	Safe Room installed in Minors lane Neighborhood	C	1,2,3,4 & 5
2. Wind/Storm Driven Hazards	<b>Promote Safe Rooms/ Tornado Shelter for New Construction</b> <ol style="list-style-type: none"> <li>1. Encourage new construction to include a safe room.</li> <li>2. Require all new manufactured home parks to build a safe room. Tornado Shelters for manufactured homes.</li> <li>3. ARC work with the HBAL to build safe rooms.</li> </ol>	NWS - John Gordon & Joe Sullivan EMA – Jim McKinney	PDS Metro Council Insurance Co. NWS IPL Manufactured home parks ARC HBAL	Grant dependent	Grants	SOP for new construction  SOP for new Manufactured home parks	C	1, 2, 3, 4 & 5
3. Wind/Storm Driven Hazards	<b>Increase Awareness of Outages During an Event</b> <ul style="list-style-type: none"> <li>▶ Outbound calls from LG&amp;E re: outages</li> <li>▶ Mapping on websites</li> </ul>	LG&E – David Guy	Media Mayor's office EMA MSD EMS	2011	NOB	Completion of outbound call notification	B	1, 2, 4 5, 6, & 7

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
4. Wind/Storm Driven Hazards	<b>Training/Outreach</b> Code Plus issue ▶ Market HBAL for hurricane clips and safe houses	IPL -Robert Kirchdorfer	NWS EMA ARC IPL KyEM KWPC LOJIC HBAL		NOB	Code activated	C	1, 2, 5 & 6
5. Wind/Storm Driven Hazards	<b>Promote &amp; Distribute Weather Radios</b>	NWS -John Gordon, Mike Callahan & Joe Sullivan	EMA Corporate sponsors HBAL ARC	Grant dependent	Grants	Distribution of Radios	B	1 & 5
6. Wind/Storm Driven Hazards	<b>Public Outreach on Retrofitting, Mitigation, Education and Wind-Driven Building Techniques</b> 1. Develop standardized message and program for how to make a home wind resistant 2. Partner with KY Weather Preparedness Committee (KWPC) that applied for a grant to buy FLASH (Federal Alliance for Safe Homes) cards	NWS – Joe Sullivan  EMA -Jim McKinney	HBAL NWS ARC EMA KWPC IPL	2011	Grants  NOB	Completed & disseminated outreach  Partnerships	B	1 & 5
7. Wind/Storm Driven Hazard	<b>Develop Segment/Outreach for Metro TV during an Event</b> ▶ Encourage Metro TV to develop a segment for wind/storm hazards. ▶ Promote weather radios, etc.	EMA - Jim McKinney	ARC NWS PW KY VOAD Metro TV  MetroCall - 311 Metro United Way - 211	2011	NOB  Grants	Outreach Programs ready for airing during an event	B	1, 3, 4 & 5



# 2011 Winter Storms Hazard

## Five-Year Action Plan

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. Winter Storm Hazard	<b>Expand Snow Routes Outreach</b> LOJIC maps showing snow routes (live routes) should be more accessible/better advertised e.g., radio and media links, Metro TV. <ul style="list-style-type: none"> <li>▶ Outreach to public/ advertise, maybe use Mayor's Media office.</li> <li>▶ Show GPS, real-time</li> </ul>	LOJIC – Curt Bynum  Public Works – Dirk Gowin	EMA KIPDA LG&E EMS Radio Media Cable	2011	NOB	Greater exposure  Real-time Maps accessible via all media  Developed outreach	B	1, 4, 5, 6 & 7
2. Winter Storm Hazard	<b>Expand Operation Snow &amp; Transportation planning</b> <ul style="list-style-type: none"> <li>▶ Staggered release plan to ease traffic before snow storms, esp. downtown</li> </ul>	Public Works – Jeremy Raney	MSD Solid Waste TARC LMPD Mayor's Office	2011	NOB	Activation of snow emergency routes	B	1, 3, 4, 5, 6 & 7
3. Winter Storm Hazard	<b>Update standard operating procedures for purchasing EMS vehicles</b> <ul style="list-style-type: none"> <li>▶ Consider winter weather when purchasing vehicles such as ambulances (hard to get through neighborhood roads covered in snow)</li> </ul>	EMS – Roger Parvin	Facilities Mgmt LEPC EMA	TBD	NOB	Updated SOP for purchasing vehicles	C	1 & 5

**Note: "NOB" indicates an internal agency effort via Normal Operating Budget resources**

# 2011 Haz/Mat Hazards

## Five-Year Action Plan

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. Haz/Mat	<b>Promote Public Education for Haz-Mat Activities and Sheltering in Place</b> <ul style="list-style-type: none"> <li>Promote sheltering-in-place</li> <li>Promote education of hazmat activities</li> <li>Utilize print, Metro-TV, and other media.</li> </ul>	LEPC – Jim Bottom	ARC Metro TV APCD Media Schools EMA MSD Public Health	TBD	NOB  Grants	Outreach disseminated  Promotion of activities	B	1, 3, 4 & 5
2. Haz/Mat	<b>Develop Public Education/ Awareness/ Training For Business Community</b>  Encourage companies with chemicals to consider the effects of natural hazards on their stock of hazardous materials and negative impact on employees and/or public.	LEPC – Jim Bottom	APCD Public Health EMA MSD	TBD	NOB  Grants	Development of Awareness Materials /Training	B	1, 3, 4 & 5
3. Haz/Mat	<b>Outreach to Individuals And Small Businesses</b>  <b>Promote Spill Plans</b> to individuals and small businesses that have hazmat, but aren't required by law to have a spill plan. Outreach to: <ul style="list-style-type: none"> <li>Encourage storing materials in a safe manner above flood potential or anchoring tanks etc.</li> <li>Make available "industry best practices" for handling haz-mat.</li> <li>For small companies, KOSHAs education and training division could be a good resource.</li> </ul>	LEPC – Jim Bottom	IPL Small companies KOSHA Public Health APCD EMA MSD	As soon as message is developed	None required	Development of Outreach/ disseminated	C	1, 2, 3, 4, 5 & 6

Note: "NOB" indicates an internal agency effort via Normal Operating Budget resources

# 2011 Geological Hazards

## Earthquake, Karst/Sinkholes, Landslide

### Five-Year Action Plan

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. Geological: Earthquake, Karst/Sinkholes, Landslide	<b>Risk Assessment</b>  <b>Attain new soils data for updated risk assessment for geological hazards</b> <ul style="list-style-type: none"> <li>▶ New soils will help determine earthquake ground motion amplification for downtown <ul style="list-style-type: none"> <li>○ LOJIC has core county soils data</li> </ul> </li> <li>▶ Incorporate new soils data into LOJIC layers</li> </ul> <p>* a FEMA grant application was submitted in December 2010</p>	KGS -Drew Andrews	PW MSD EMA PDS Metro Parks LOJIC IPL USGS NRCS Corp of Engineers Local geotechnical, architectural & building firms	Grant dependent	NOB  Grant  Resources needed	Updated risk assessments  Data layers in LOJIC	A	7
2. Geological: Earthquake, Karst/Sinkholes, Landslide	<b>Public Outreach Strategy To Specific Targeted At-Risk Areas</b> <ul style="list-style-type: none"> <li>▶ Develop standard outreach for areas at-risk according to census block evaluation</li> <li>▶ Disseminate to targeted areas and to partner website, media, Metro Council districts ...</li> </ul>	EMA – Jim McKinney	MetroCall - 311 Metro United Way - 211 PDS PW MSD LOJIC KGS Metro Council Media outlets Louisville Free Public Library	Grant dependent	NOB  Grants  Metro Council discretionary funds	Strategy and document in place for Public info	B	4 & 5

# 2011 Earthquake

## Five-Year Action Plan

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. Earthquake	<p><b>Develop an Earthquake Risk Assessment With Best Available Building Data</b></p> <p><b>Collect All Enhanced Building Data.</b> A major research project:</p> <ul style="list-style-type: none"> <li>▶ Year built, especially structures older than 1980</li> <li>▶ Type of foundation, building construction type, number of stories</li> </ul> <p>* tied to All Hazards public building inventory project. Grant was submitted December, 2010.</p>	TBD special project required	LOJIC Fire Inspections LMPD Metro Facilities Public Health Local Hospitals PVA JCPS IPL U of L Public Admin	TBD special project required	Resources needed  Request from state or federal funding or grant	Collected data	A	7
2. Earthquake	<p><b>Risk Assessment: Research the Existing Collected Data and Incorporate Inventory into LOJIC</b></p> <p>PDS completed collecting public historical data. Next steps:</p> <ol style="list-style-type: none"> <li>4. Historical Structures Survey.</li> <li>5. Inventory of public buildings: review data for accuracy and completeness.</li> <li>6. Incorporate data into LOJIC</li> </ol> <p>Metro Planning Design Services (PDS) and Property Valuation Administration (PVA) will work with LOJIC to coordinate the inventory.</p>	LOJIC -Curt Bynum  Richard Jett-Historic Preservation	PVA PDS PW Metro Facilities	2011	NOB  Resources needed	Information gathered & Disseminated  Layers in LOJIC	A	7

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
3. Earthquake	<b>Mitigation: Target critical and Essential Public Buildings For Mitigation Or Retrofit*</b> <ul style="list-style-type: none"> <li>▶ Develop a standard method for structural soundness and asset tie-downs (i.e. heavy bookcases, equipment).</li> <li>▶ Utilize proven success strategy and methods from JCPS</li> <li>▶ Will require evaluation of each public building</li> </ul> <p><i>*Dependent on completion of inventory and assessment. See All Hazards #1, 2, &amp; 5.</i></p>	Metro Facilities Mgmt – Betty Younis	PW LOJIC JCPS Louisville Free Public Library Universities Colleges	Dependent on completion of inventory and assessment	TBD Grant funding	# of buildings retrofitted	C	1, 2, 3, 4 & 6
4. Earthquake	<b>Outreach to Schools</b> <ul style="list-style-type: none"> <li>▶ Education in schools: K- 12 / colleges / universities</li> <li>▶ Emphasize take the information home</li> <li>▶ Use National Earth Science Education Standard for kindergarten - 12  <a href="http://www.uky.edu/KGS/education/edustand.htm">http://www.uky.edu/KGS/education/edustand.htm</a></li> <li>▶ Utilize JCPS &amp; KY EQ drill as standard.</li> </ul>	JCPS-Chuck Fleischer	KGS and website for materials Universities Parochial /Private KyEM EMA	2011	NOB	Outreach and educational materials	B	5

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
5. Earthquake	<p><b>EQ Training &amp; Outreach National Level Exercise 2011 May 16-20, 2011</b></p> <p>Active participation in Madrid Fault training, May 2011, National Level Exercise 2011 (NLE-11). KyEM in planning phases for this exercise. Each EM Director will activate their EOC process, most likely during the first day of the event. There will be an opportunity for LEPC interaction. <a href="http://www.ready.gov/nle2011/index.html">http://www.ready.gov/nle2011/index.html</a></p> <p>The purpose of NLE 2011 is to prepare and coordinate a multiple-jurisdictional integrated response to a national catastrophic event – specifically a major earthquake in the central United States region of the New Madrid Seismic Zone. NLE 2011 will involve thousands of government officials at the federal, state, local and tribal levels, members of the private sector, and the general public. Participants will conduct simultaneous, related exercise activities at command posts, emergency operation centers and other locations in the Washington D.C. area and the eight affected central U.S. states (Alabama, Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri, and Tennessee). The functional exercise will offer agencies and jurisdictions a way to validate their plans and skills in a real-time, realistic environment and to gain the in-depth knowledge that only experience can provide.</p>	KyEM - Mike Dossett	KyEM LEPC EMA LWC LG&E	2011	NOB	Training	B	3, 4 & 5
6. Earthquake	<p><b>Lessons Learned and new Approaches after the EQ Training &amp; Outreach NLE 2011 May 16-20, 2011</b></p> <p>Develop strategy for mitigation for critical infrastructure such as underground electric, gas and all utilities</p>	LG&E - David Guy	LWC Insight CATV MSD KyEM PW KGS AT&T EMA LOJIC Public Service Commission	after NLE in May 2011  2011 or 12	Each organizations BC plan?  Or emergency plan	information gathered and disseminated	C	3, 4 & 5

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
<b>7. Earthquake</b>	<b>EQ Training &amp; Outreach</b> Develop and promote EQ tabletop exercise to include all local hazard mitigation plan participants	MetroSafe/EMA – Doug Hamilton	Hazard Plan Advisory Committee	2011	NOB	Completed training exercise	C	3,4,5

Note: “NOB” indicates an internal agency effort via Normal Operating Budget resources

# 2011 Karst and Sinkhole

## Five-Year Action Plan

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. Karst/ Sinkholes	<b>Risk Assessment</b>  <b>Data collection to inventory sinkholes</b> <ul style="list-style-type: none"> <li>▶ Dye tracing by KDOW to detect sinkholes. Partner with KGS.</li> <li>▶ Will require coordination and meetings with KGS, KDOW, and MSD to determine next steps and to build a schedule</li> </ul>	KDOW - Carey Johnson  KGS – Drew Andrews	MSD PDS LOJIC	2012	NOB  External funding for materials	Revised sinkhole data	C	5, 7
2. Karst/ Sinkholes	<b>Risk Assessment</b>  <b>Data collection to inventory sinkholes</b> <ul style="list-style-type: none"> <li>▶ Incorporate Metro Parks karst/sinkhole mapping project with LOPC as best available data.</li> </ul>	Metro Parks – John Hamilton	LOPC LOJIC KGS Suburban Cities	2011	NOB	Completed risk assessment	C	7
3. Karst/ Sinkholes	<b>Risk Assessment</b>  <b>Data collection to inventory sinkholes</b> Using high-resolution aerial imagery and geophysics to assess high-hazard areas for incipient cover collapse sinkholes <ul style="list-style-type: none"> <li>▶ Develop strategy to phase project or as one larger project to accommodate funds and time. Could be a Phased 1 to 4 yr project.</li> <li>▶ LOJIC to be recipient of the resulting digital data, and a central repository for the report</li> </ul>	KGS – Jim Dinger	LOJIC	2011	Part-time to 1.5 Full-time Employee	Production of data set/delineation of high karst hazard areas	C	6 & 7



Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
4. Karst/ Sinkholes	<b>Risk Assessment</b> <b>Project to collect standardized info to protect existing, new and future buildings/infrastructure</b> <ol style="list-style-type: none"> <li>1. Need a central local agency or avenue to report and receive info for karst/sinkhole locations indicated on development plans per new karst regulations.</li> <li>2. Need a central local agency or avenue to report and receive info for karst/sinkhole damages and events</li> <li>3. Develop SOP or Policy Development</li> <li>4. Store loss inventory, esp. for roads, buildings and utilities</li> </ol>	PDS – Dawn Warrick	PW Metro Parks LOPC MSD NRCS KGS LOJIC IPL KYTC EMA	2011	NOB  Request from general funding	<ul style="list-style-type: none"> <li>▶ Review agency in place</li> <li>▶ Data captured</li> <li>▶ Mapped and recorded in LOJIC</li> </ul>	B	5, 6, 7
5. Karst/ Sinkholes	<b>Public Outreach/Education/Warning</b> <ul style="list-style-type: none"> <li>▶ Develop strategy for outreach/warning</li> <li>▶ Post warnings and barriers be posted around sinkholes on public lands</li> <li>▶ Develop Signage</li> </ul>	EMA-Jim McKinney  Metro Parks-John Hamilton	PW PW in suburban cities NRCS Future Fund 21 <sup>st</sup> Century	2013	NOB  Request from general funding	Warnings, barriers and signs posted	B	4, 5, & 6
6. Karst/ Sinkholes	<b>Certification Process for Regulations in Development Code for Karst/Sinkhole</b> <ul style="list-style-type: none"> <li>▶ Training Program, as needed</li> </ul>	PDS – Dawn Warrick	Planning Commission IPL NRCS KGS LOJIC	Annual program	NOB	Training conducted	A	2, 5, 6, & 7
7. Karst/ Sinkholes	<b>Mitigation: Repairs to public lands and facilities</b> <ul style="list-style-type: none"> <li>▶ Parks</li> <li>▶ Government owned</li> </ul>	PW- Jeremy Raney	MSD KYDOW LOPC LOJIC Future Fund 21 <sup>st</sup> Century Metro Parks	2011	NOB  Request from general funding	Repairs completed	B	1 & 2

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# 2011 Landslide

## Five-Year Action Plan

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. Landslide	<b>Risk Assessment</b> <b>Project to Collect Info to Protect Existing, New And Future Buildings/Infrastructure</b> <ul style="list-style-type: none"> <li>▶ KGS can be a central local agency or avenue to report and receive info for landslide, including damages and events. <ul style="list-style-type: none"> <li>○ Develop method to partner and receive info</li> </ul> </li> <li>▶ Research what has been looked at in the past. LiDAR will assist with this element.</li> </ul>	KGS -Drew Andrews	PDS IPL EMA Metro Parks LOPC MSD NRCS KGS LOJIC Planning Commission PW	2012	NOB	Review agency in place	A	4, 6, & 7
2. Landslide	<b>Update Risk Assessment</b> <b>Data collection for landslides</b> <ol style="list-style-type: none"> <li>Inventory septic tanks that can cause landslides <ul style="list-style-type: none"> <li>○ Metro Public Health currently has personnel working to geo-code the locations of septic systems</li> <li>○ Estimates show over ½ of Anchorage have septic tanks</li> </ul> </li> <li>Collect data from other sources</li> <li>Aggregate data</li> </ol>	Metro Public Health – Bill wetter, Steve Hosch	PVA LOJIC IPL City of Anchorage KGS Metro Facilities MSD	2011	Resources needed Request from general funding NOB	Data collected and strategy in place	A	1 & 7

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
3. Landslide	<b>Mitigation: Project to Enforce Current Regulations And Protect Infrastructure</b> <ul style="list-style-type: none"> <li>▶ Enforce Binding Elements</li> <li>▶ Limit clearing of vegetation on high-risk slopes</li> <li>▶ Ensure BMPs for drainage</li> </ul>	IPL – Robert Kirchdorfer	PVA LOJIC MSD	Annual	Request from general funding  NOB	Data collected and strategy in place	A	1, 2, & 6
4. Landslide	<b>Mitigation: Repairs and Reforestation To Public Lands and Facilities</b>  <b>Reforestation</b> <ul style="list-style-type: none"> <li>▶ 10,000 tree initiative (see Flood # 21)</li> </ul> <b>Repairs to</b> <ul style="list-style-type: none"> <li>▶ Parks</li> <li>▶ Government owned</li> </ul>	Metro Parks – John Hamilton	MSD KDOW LOPC LOJIC Future Fund 21 <sup>st</sup> Century		NOB	Acreage of lands repaired	B	1 & 2
5. Landslide	<b>Mitigation: Slope Stabilization</b> <ul style="list-style-type: none"> <li>▶ Determine best method for slope stabilization on Brinson Drive at land acquisition site.</li> <li>▶ Perform assessment, develop strategy</li> <li>▶ Repair public access road due to erosion</li> </ul>	EMA – Jim McKinney	MSD PW	Grant dependent	Grants	Stabilized area	C	1, 2

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# 2011 Drought

## Five-Year Action Plan

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. Drought	<b>Develop Method for Collecting Data</b> <ul style="list-style-type: none"> <li>▶ Information on historic data</li> <li>▶ Estimates for losses</li> <li>▶ Dates of occurrences</li> </ul>	NWS –Mike Callahan	KDOW LWC MSD KIPDA NRCS	2011	NOB	Data collected and disseminated	C	7
2. Drought	<b>Mitigation: Drought Damage and Outreach/Education</b> WHEN Drought occurs, Outreach and education to keep the public informed should include <ul style="list-style-type: none"> <li>▶ Foundation cracking outreach: Promote public awareness, soil shrinkage can lead to cracking in foundations – solutions are to water the lawn and the foundation</li> <li>▶ Drought leads to fire hazards, including wildfire</li> </ul>	EMA -Jim McKinney	NRCS MetroCall - 311 Metro United Way - 211 LWC LEPC Agricultural extension Public Health Louisville Fire Suburban Fire Media outlets	When Drought Occurs	NOB	Completed outreach	B	4 & 5

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# 2011 Extreme Heat

## Five-Year Action Plan

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. Extreme Heat	<b>Public Outreach &amp; Education</b> <ul style="list-style-type: none"> <li>Coordinate with non-traditional agencies for community outreach</li> </ul>	NWS – John Gordon	Coalition of Homeless	When Extreme Heat Occurs	NOB	Completed outreach	B	4 & 5
2. Extreme Heat	<b>Public Outreach &amp; Education</b> <b>Promote National NWS Campaign</b> NWS unveiling “Beat the Heat Check the Backseat” in April 2011 with Al Roker in NYC. <ul style="list-style-type: none"> <li>Propose Louisville be a test bed to promote child heat safety in vehicles.</li> <li>Advisory Committee promote via partnerships, once logo is finalized</li> </ul>	NWS – John Gordon	EMA EMS	Spring 2011 for Al Roker rollout	NOB	<ul style="list-style-type: none"> <li>Logo</li> <li>Pilot for outreach</li> </ul>	B	5
3. Extreme Heat	<b>Public Outreach &amp; Education</b> <ul style="list-style-type: none"> <li>Animals and sheltering during a disaster</li> <li>Develop ideas for public service piece on MetroTV and other media outlets</li> </ul>	Animal Control - Jackie Gulbe & Adam Hamilton	ARC Salvation Army VOAD Media outlets MetroTV	When Extreme Heat Occurs	NOB	Completed outreach	B	5

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# 2011 Wildfire

## Five-Year Action Plan

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
1. Wildfire	<b>No Burn Regulations</b> <ul style="list-style-type: none"> <li>▶ Increase public awareness and enforcement of no burn regulations</li> </ul>	APCD-Shane Corbin, D.J. Fountain	IPL Louisville Fire Suburban Fire LMPD	When Wildfire Occurs	NOB	Enforcement	C	1 & 2
2. Wildfire	<b>Public Outreach &amp; Education</b> <ol style="list-style-type: none"> <li>1. Increase public awareness during drought about wildfire potential</li> <li>2. Wildfire early warning (Red Flag) education and outreach</li> </ol>	Metro Fire - Doug Recktenwald  Suburban Fire - Joe Johnson	Media outlets	When Drought and Wildfire Occurs	NOB  Capital budget	Completed outreach	B	5
3. Wildfire	<b>Clean up of damaged trees</b> <ul style="list-style-type: none"> <li>▶ Partner with Metro Parks and Public Works</li> </ul>	Metro Parks – John Hamilton  PW-Asst. Director, pending mgt approval	Future Fund 21 <sup>st</sup> Century	2011	NOB  Capital budget	Trees removed	C	1 & 2
4. Wildfire	<b>Mitigation: Acquire and deed restrict forested land</b>  E.g. Jefferson Memorial Forest, greenways, and parks	Metro Parks – John Hamilton	MSD Louisville Metro Future Fund 21 <sup>st</sup> Century LOJIC PVA	Annual	NOB  Capital budget  Acquisition depends on Grants	Acres purchased/ acquired	C	1 & 2
5. Wildfire	<b>Mitigation: Develop strategy for fire suppression</b> <ol style="list-style-type: none"> <li>1. Target wildfire at-risk census blocks</li> <li>2. Promote Best Management Practices (BMPs)</li> <li>3. Delineation of non-wooded areas susceptible to wildfire</li> </ol>	Metro Fire – Doug Recktenwald  Suburban Fire -Joe Johnson	EMA LOJIC Metro Parks All Fire Districts PDS	2011	NOB	Strategy & Implementation plan	C	1, 2, 6 & 7

Hazard	Type of Activity or Project	Lead Implementer & Contact Person	Other Proposed Partners	Proposed Schedule	Funding/ Budget Considerations	Performance Measure	Priority	Matches Goals 1 - 7
6. Wildfire	<b>Outreach Coordinated among Emergency Response Groups about Standard for Reporting Grass, Wild Fire, etc....</b> <ul style="list-style-type: none"> <li>▶ Action to involve coordinated outreach among Fire Dept's, MetroSafe, and any other emergency response group as needed to increase awareness of the event tracking/reporting tools/processes currently used.</li> </ul>	Metro Fire – Doug Recktenwald  Suburban Fire -Joe Johnson	EMA MetroSafe Fire Chiefs Assoc Jefferson County Fire Trustees	2011	NOB	Improved outreach	C	1, 2, 3

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